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December 6th.

Mr. Lea, President in the Chair.

Thirty-nine members present.

Dr. Fisher presented for publication an index of the genera described or referred to in the Proceedings of the Academy, vol. i.—viii., which was referred to the Committee on Proceedings, with power to act.

A paper was presented for publication in the Proceedings, entitled, "Descriptions of Three New Species of Exotic Uniones, by Isaac Lea," and was referred to a committee.

Mr. Lea exhibited a specimen of *Unio subrotundus*, Lea, from White River, Indiana, and observed that he had in May, 1858, called the attention of the members to a female specimen of *Unio multiplicatus*, Lea, which had both lobes of the branchia on both sides charged with embryonic shells. In the following June, he exhibited a fine female, *U. rubiginosus*, Lea, also with the four lobes charged. This species differed from the former in having red ova, which were quite intense in color, resembling arterial blood. In July, 1859, he called attention to a third species, *U. Kleinianus*, Lea, from Georgia, which had "a branchial uterus in both lobes of the branchia on each side." These specimens were in alcohol, and if the ova were red when living, it was not observable in those. The specimens of *subrotundus* now exhibited, prove this species to be possessed of branchial uteri in the four lobes of the branchia, and, also, that the ova are red, like *rubiginosus*. Therefore, we now know of four species which have this remarkable provision of a branchial uterus in each lobe or leaf of the branchia, viz:

Unio multiplicatus,
Unio rubiginosus,
Unio Kleinianus,
Unio subrotundus,

and of these, two at least have the very remarkable condition of redness of the ova; viz:

Unio rubiginosus,
Unio subrotundus.

It is a fact not less interesting, that the spermatic fluid of the male was found in the glandular flattened lobules, also to be red, but the color did not appear to be so intense as that in the ova of the female. Whether the males of other species, the females of which have red ova, will be found to have red spermatic fluid, remains for future investigation and observation.

That other species will be found to have uteri in the four lobes of the branchia he had little doubt, and that red ova would be found to characterise other species is also probable. The coördination of the four species, as regards their four branchial uteri, is very remarkable, and it is the more striking, as they appear from their shelly covering—their exo-skeleton—to belong to groups very different in the structure of this part. The *U. multiplicatus*, and *U. Kleinianus*, are both plicate; the former is the largest of the genus *Unio* known, and the latter is among the smallest. The *U. rubiginosus* and *U. subrotundus* are smooth, without any appearance of folds, and in their outline are different from the two former, and they also differ much, one from the other. In the four species there is such a marked difference in the shelly covering, as to cause the species to be recognized at once as to their distinct normal forms.

It has always been a difficulty, in the examination of alcoholic specimens, to make exact and satisfactory differences in some of the soft parts, and these may often be erroneously described where color or delicate organs and processes are involved in the discussion of their characteristics. These difficulties can only be avoided where the specimens can be examined in a living state, where all

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the parts are in a normal condition. It is, therefore, greatly to be desired that zoologists in our different zoological districts would give attention to the anatomical structure of the species which inhabit their own districts. Eventually, in this way, there may be built up a correct knowledge of the habits and anatomy of this interesting family, of which we have a somewhat comparatively correct diagnosis of the exo-skeleton.

Mr. Lea also mentioned that, in connexion with this subject, he had paid much attention to the power of vision in the family *Unionidæ*, since his communication on the subject, in February, 1857. He found the following species always to close the anal opening, and to withdraw the papillæ of the branchial opening when the light was suddenly intercepted, viz :

Unio cylindricus, Say.
Unio rubiginosus, Lea.
Unio subrotundus, Lea.
Unio pyramidatus, Lea.
Unio obscurus, Lea.
Unio pustulosus, Lea.
Unio Æsopus, Green.
Anodonta imbecilis, Say.

Dr. J. A. Meigs read some remarks of Mr. Joseph Barnard Davis, reviewing the method of measurement, as a diagnostic means of distinguishing human races, adopted by Drs. Schertzer and Schwarz, in the circumnavigatory expedition of the Austrian vessel Novara.

The number of the Proceedings of the Academy for November was laid on the table.

December 13th.

Dr. RUSCHENBERGER in the Chair.

Thirty-three members present.

A paper was read, entitled, "Reflections upon the nature of the temporary star of the year 1572, an application of the nebular hypothesis, by Alexander Wilcocks, M.D.," and was referred to a committee.

The decease of Dr. H. C. Caldwell, late a member of the Academy, was announced : he died at Lewisburg, Va., Dec. 1st., aged 28 years.

December 20th.

Mr. LEA, President in the Chair.

Forty-five members present.

Papers were presented for publication in the Journal, entitled, "Descriptions of New Cretaceous and Eocene Shells of Mississippi and Alabama, also, with Notes on Eocene Fossil Shells, by T. A. Conrad."

"Descriptions of Exotic Unionidæ, by Isaac Lea."

And were referred to a committee.

The following were presented for publication in the Proceedings :—

"Notice of the Shells collected by Mr. J. Xantus, at Cape San Lucas, by P. P. Carpenter."

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